

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
31 December 2003 (31.12.2003)

PCT

(10) International Publication Number
WO 2004/000383 A3

- (51) International Patent Classification⁷: **A61L 31/10**, 27/34
- (21) International Application Number: **PCT/US2003/015544**
- (22) International Filing Date: **14 May 2003 (14.05.2003)**
- (25) Filing Language: **English**
- (26) Publication Language: **English**
- (30) Priority Data:
10/176,504 **21 June 2002 (21.06.2002)** **US**
- (71) Applicant: **ADVANCED CARDIOVASCULAR SYSTEMS, INC [US/US]; 3200 Lakeside Drive, Santa Clara, CA 95054 (US).**
- (72) Inventors: **ROORDA, Wouter, E.; 36 Roosevelt Circle, Palo Alto, CA 94306 (US). DING, Ni; 4103 Cortona Court, San Jose, CA 95135 (US). PACETTI, Stephen, D.; 4578 Madoc Way, San Jose, CA 95130 (US). MICHAL, Eugene, T.; 56 Lower Terrace, San Francisco, CA 94114 (US). SHAH, Ashok, A.; 1571 Four Oaks Road, San Jose, CA 95131 (US). HOSSAINY, Syed, F., A.; 34325 Tupelo Street, Fremont, CA 94555 (US).**
- (74) Agent: **KERRIGAN, Cameron; Squire, Sanders & Dempsey L.L.P., 600 Hansen Way, Palo Alto, CA 94303-1043 (US).**
- (81) Designated States (*national*): **AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.**
- (84) Designated States (*regional*): **ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).**
- Published:
— *with international search report*
- (88) Date of publication of the international search report: **27 May 2004**
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

WO 2004/000383 A3

(54) Title: **POLYACRYLATES COATINGS FOR IMPLANTABLE MEDICAL DEVICES**

(57) Abstract: A coating for a medical device, particularly for a drug eluting stent, is described. The coating can include a polycyate, a blend of polyacrylates, or a blend of the polyacrylate with other polymers, for example, poly(ethylene-covinyl alcohol).

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/15544

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 A61L31/10 A61L27/34

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, CHEM ABS Data, PAJ, WPI Data, BIOSIS, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	"ROLLING THERAPEUTIC AGENT LOADING DEVICE FOR THERAPEUTIC AGENT DELIVERY OR COATED STENT" RESEARCH DISCLOSURE, KENNETH MASON PUBLICATIONS, HAMPSHIRE, GB, no. 434, June 2000 (2000-06), page 975, XP000980708 ISSN: 0374-4353 *entire document*	1,2,4,5
X	NOVICK, SCOTT J. ET AL: "Protein-containing hydrophobic coatings and films" BIOMATERIALS (2001), VOLUME DATE 2002, 23(2), 441-448, XP002252591 *abstract*	1,2,4,5

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *S* document member of the same patent family

Date of the actual completion of the international search

3 September 2003

Date of mailing of the international search report

23. 01. 2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3018

Authorized officer

Schnack, A

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/15544

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00/29043 A (HABERBOSCH WERNER ; JUSTUS LIEBIG UNI GIESSEN (DE); CHRISTOPHE BURE) 25 May 2000 (2000-05-25) claims 1-26 examples 1-4	1-5
X	US 2001/014717 A1 (HOSSAINY SYED F A ET AL) 16 August 2001 (2001-08-16) '0031!-'0042!', '0080! claims 1-36	1,2,4,5
X	WO 99/55396 A (SURMODICS INC) 4 November 1999 (1999-11-04) page 4, line 1 - page 8, line 30 example 1	1-9
X	WO 02/24249 A (BINDERMAN ITZHAK ; KOOLE LEVINAS H (NL)) 28 March 2002 (2002-03-28)	1,2,4,5
Y	page 4, line 5 - line 30 page 6, line 26 - page 8, line 11 page 12, line 1 - line 27 page 16, line 5 - page 17, line 8	3
X	US 6 110 483 A (ZHANG XIANPING ET AL) 29 August 2000 (2000-08-29) column 3, line 65 - column 6, line 16 claims 1-40	1-8
P,X	WO 03/022324 A (ABBOTT LAB) 20 March 2003 (2003-03-20)	1,2,4,5
Y	page 16, line 19 - page 17, line 22	3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/15544

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 8.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-9

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/SA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-9

A coating for an implantable medical device, comprising a thermoplastic polyacrylate material free from acetate species and a herapeutically active agent incorporated therein.

2. claims: 10-27

A coating for an implantable medical device, the coating comprising a first layer having an active agent incorporated therein and a second layer disposed over the first layer, wherein the second layer comprise a thermoplastic polyacrylate material for modifying the rate of release of the agent.

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/US 03/15544

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0029043	A	25-05-2000	FR 2785812 A1	19-05-2000
			AU 1168100 A	05-06-2000
			CA 2349930 A1	25-05-2000
			EP 1131113 A1	12-09-2001
			WO 0029043 A1	25-05-2000
			JP 2002529203 T	10-09-2002
			US 6517858 B1	11-02-2003
US 2001014717	A1	16-08-2001	US 2002193475 A1	19-12-2002
			EP 1347792 A2	01-10-2003
			WO 02058753 A2	01-08-2002
			AU 2449601 A	03-07-2001
			CA 2395199 A1	28-06-2001
			EP 1242130 A1	25-09-2002
			JP 2003517890 T	03-06-2003
			WO 0145763 A1	28-06-2001
			US 2001018469 A1	30-08-2001
			AU 4197401 A	15-10-2001
			WO 0174415 A1	11-10-2001
WO 9955396	A	04-11-1999	AT 219693 T	15-07-2002
			AU 760408 B2	15-05-2003
			AU 3563899 A	16-11-1999
			CA 2320259 A1	04-11-1999
			DE 69901927 D1	01-08-2002
			DE 69901927 T2	10-10-2002
			DK 1019111 T3	14-10-2002
			EP 1174157 A1	23-01-2002
			EP 1019111 A1	19-07-2000
			ES 2179646 T3	16-01-2003
			JP 3406903 B2	19-05-2003
			JP 2002512856 T	08-05-2002
			PT 1019111 T	31-10-2002
			WO 9955396 A1	04-11-1999
			US 2003031780 A1	13-02-2003
			US 6214901 B1	10-04-2001
			US 6344035 B1	05-02-2002
			US 2002032434 A1	14-03-2002
WO 0224249	A	28-03-2002	AU 2095002 A	02-04-2002
			WO 0224249 A2	28-03-2002
			US 2002065551 A1	30-05-2002
US 6110483	A	29-08-2000	AU 8159898 A	04-01-1999
			CN 1261288 T	26-07-2000
			EP 1003571 A2	31-05-2000
			JP 2002506369 T	26-02-2002
			WO 9858690 A2	30-12-1998
WO 03022324	A	20-03-2003	US 2002123505 A1	05-09-2002
			WO 03022807 A2	20-03-2003
			WO 03022324 A1	20-03-2003
			US 2003129215 A1	10-07-2003